

STRATEGIC MISSTEP: "IMMORTAL" ROBOTIC WARFARE, INVITING COMBAT TO SUBURBAN AMERICA

BY

LIEUTENANT COLONEL SHAUN R. MCGRATH
United States Air Force

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U.S. Army War College, Carlisle Barracks, PA 17013-5050

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SUBURBAN AMERICA**

by

Lieutenant Colonel Shaun R. McGrath
United States Air Force

Lieutenant Colonel David G. Bolgiano
Project Adviser

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U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

ABSTRACT

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Aided by rapid technological advances, operators of Remotely Piloted Aircraft (RPA) can now carry out lethal combat actions from perceived safe sanctuaries in the United States (U.S.), 7,500 miles from the enemy. However, this thesis challenges the U.S. assumption that such tactical successes using armed RPAs to engage the enemy with “risk-less distant warfare” will result in strategic victory. This is particularly true when used to engage the enemy outside of direct force-on-force engagements. The very nature of this use negates America’s own goal of decreasing the threat to its civilian populace from enduring enemy counter action. The enduring threat will grow from a deficient U.S. assessment of the environment in which the enemy’s ability to attract support for its historically based strategy is aided by instantaneous and ubiquitous global interconnectivity. The lack of clarity in legal, moral, and ethical policies guiding the employment of such robotic warfare highlights the current strategic misstep by prolonging the Long War from increased anti-U.S. sentiment and an enduring legitimate counter attack threat to RPA operators. The persistent threat will not only hold the operators *at risk*, but also those around them in suburban America.

STRATEGIC MISSTEP: “IMMORTAL” ROBOTIC WARFARE, INVITING COMBAT TO SUBURBAN AMERICA

In the year 2020, deep inside country “X” hid the mastermind of a series of linked global cyber-terrorist attacks. The attacks resulted in staggering losses to world financial institutions and major United States based companies. Diplomatic efforts to arrest and extradite the individual failed. The attacks had to stop. The solution: send in the newest generation of remotely piloted stealth aircraft with its cooperative nano wingmen.¹

The mission progressed with the aircraft on “automatic intelligent” mode weaving through the complex anti-access environment. Upon reaching the objective area the operator put the aircraft in orbit, launching the nano warriors to conduct surveillance and sniff operations. One nano used miniature cameras to locate and track the target. Another, not much larger than a common mosquito, collected a blood sample to ensure a positive DNA match. The nano uplinked the sample analysis to the operations center, verifying a match to a previous standardized airport security screening sample. The operator sent the fire pulse from thousands of miles away to the stealth drone, instantly pulverizing the terrorist. The strike also killed an unrecognized subject in conversation with the terrorist. Unfortunately, the latter turned out to be a high-level government official. The strike alerted country “X” authorities monitoring the conversation to the drone’s presence. Country “X” quickly hacked and severed control to the stealth drone’s feed, forcing it to crash on egress inside country borders.

Tactically, removing the cyber-terrorist severed the head of the spider. Strategically it unfolded quite differently. Like a starfish’s rejuvenated tentacle, the extensive network of enemy hackers replaced the terrorist to recommence attacks. Country “X” used the video captured from the attack and the subsequent death of civilians from the drone crash to justify a series of retaliatory attacks. One car bomb attack vaporized Major Huron, a stealth drone operator, and his two children in the garage of their suburban home. Months earlier, the media featured the Major in his “combat” role as a stealth drone operator at a different ops center than the one responsible for the attack in country “X”.

Sound like science fiction? Yes, and intentionally so as a primer to address a key strategic miscalculation by the United States (U.S.) in its use of remotely piloted aircraft kinetic firepower to conduct operations in the war against terror. In its rush to a technological solution, the U.S. unleashed a new era of warfare not seen since opening

Pandora's Box with the atomic age of the 1940's. Albert Einstein's petitioning for atomic research resulted in one of the greatest ironies of the nuclear age. In 1957, Einstein reversed course and began calls for nuclear disarmament with a group of concerned scientists at Pugwash, Nova Scotia, resulting in a Nobel Peace Prize.² The Nobel Peace Prize for 2009 was awarded for similar calls. Despite over a half-century's non-proliferation efforts, the U.S. along with others continue the development of "distant warfare" weapons. Thankfully to date, no remote operator of a nuclear tipped missile has ever had to "pull the trigger." In 2002, however, remotely piloted aircraft operators pulled the 7,500 mile "risk-less trigger of death" for the first time in retaliation for 9/11.

Today one solution to the vexing problem of engaging in continued retribution and pro-active strikes against terrorists or insurgents creates a growing strategic peril with every ostensible tactical success. The strategic peril stems from the expanded use of remotely piloted aircraft (RPA) strikes that target individuals. The peril primarily emanates from strikes against high value targets (HVT) or high value individuals (HVI) outside of direct force-on-force engagements.³ When used in a complimentary role for force-on-force actions, an RPA's persistent over-watch ability and targeted firepower enhances tactical success. Extrapolating this tactical success to a broader strategic campaign without the full consideration for second and third order effects induces potential strategic missteps. Key counter-terrorism experts already argue that the second order effect of anti-U.S. sentiment continues to grow with each one of these strikes.⁴ Today, however, few experts appear to connect the dots to the postulated third order effect of an increased risk of enduring enemy attacks on U.S. soil.

The potential for increased second and third order effects will expand, not contract; causing direct and future strategic challenges for the U.S. and coalition partners to face. The immediate second order effect is criticism from the international community over the expanded use of remotely piloted strike actions against insurgents and terrorists outside of direct force-on-force combat engagements. The outgrowth of global criticism against the U.S. further emboldens the base of sentiment against perceived Western aggression. The rapid increase in global connectivity from the new age of ubiquitous and instant information further stokes this criticism and adds greater scrutiny from a larger global audience. An expansion of these strikes also reduces and jaundices the strength of the legal, moral, and ethical high ground the U.S. has attempted to maintain over decades. The strength of that high ground in the world provided the absolute legitimate basis for a just war, both *jus ad bellum* and *jus in bello*, against globally inspired violent extremist terrorists. Operating in this environment translates to a greater degree of analysis of kinetic engagements during low intensity operations than any time in the past. With greater frequency, the U.S. and others are being called upon to conclusively demonstrate military proportionality and discrimination. Critics demand that the U.S. demonstrate a strike's link to *vital* national security interests, especially when claims of civilian collateral deaths occur.⁵

Advocates tout remotely piloted armed aircraft capabilities to minimize collateral civilian deaths. In theory, their persistence over a target permits a greater understanding of the environment around the target, thus enabling a more sanitized precision attack. In practice, the employment of lethal combat power is rarely sanitized. No weapons system has ever been perfect in combat. Sometimes the operator

precisely engages the correct target, but still causes collateral deaths. The fog and friction of the situation can also lead to a target being misidentified, leading to a precise engagement of an inappropriate target. In neither case do collateral deaths nor civilian casualties from these RPA strikes create a Long War foundation for strategic victory.

Regardless of a less than zero-defect tactical record, advocates attribute a remotely piloted aircraft's greatest characteristic as its means to limit operator risk. Potentially more important is its means to limit political risk from combat engagements. While *currently* flown with human decision makers "pulling the trigger" or "pushing the pickle button", those combatants often operate 7,500 miles away from the battlefield.⁶ While seen as a great asymmetric battlefield advantage, this new weapon's "risk-less distant warfare" directly spawns third order effects. Paradoxically, its asymmetric nature also draws strong complaints, voiced along a similar line of reasoning against asymmetric acts of terrorism. The obvious difference is the legitimacy of the target being engaged, but legitimacy is often blurred by the lens through which it is defined.

However, the same perilous dichotomy attached to the term asymmetry applies to the term "risk-less." True asymmetry and an absence of *risk* never truly exist. Newton's Third Law of Physics states, "for every action, there is an equal and opposite reaction."⁷ The translation to warfare may not be exact, but "for every action, there is enemy reaction." In the case of "risk-less" or asymmetric actions, the reaction manifests itself in corresponding asymmetric actions. Hence, an evaluation of the current environment and context illuminates an expected manifestation of third order effects.

Simply restated, remotely piloted aircraft attacks outside of direct force-on-force combat will continue to increase the second order effect of anti-U.S. sentiment and thus

widening the base of recruits available for radicalization into violent extremist terrorists against the West. These recruits will not only seek revenge and retribution for local attacks from military forces, but also against attacks from combatant operators some 7,500 miles away. Even after major combat actions cease, the enemy will continue to follow Sun Tzu's approach to the Long War. The enemy's ability to grow a global base, especially as evidenced recently by the radicalization of U.S. "home grown" terrorists, will pose an enduring threat and strategic challenge to the West.⁸ The resultant challenge will be endless U.S. efforts to curb and defend against the enemy's reaction to these so called "risk-less operations." The third order effects will be evident in the enemy's reaction of increased long term efforts to counter attack against interests on U.S. soil. So as long as the world or enemy "perceives" these attacks to be linked to RPA operations, their counter-attacks or reactions can and likely will be deemed legitimate against "combatant" RPA operators living in suburban America.⁹ In a quest for technologically "risk-less" warfare, the misstep of not fully considering near and long term effects may unravel a strategy aimed at reducing the threat of terrorism on U.S. soil. Unlike gaining allies' support to decry the attacks of 9/11, gaining support against enemy counter attacks targeting "combatants" operating from U.S. soil is unlikely. Thus, strategy in a rapidly changing and interconnected world is fragile and history's lessons dictate continuous reassessment.

Strategy Informed by History Forgotten

As the U.S. faces these strategic challenges, a few of history's lessons observed (not necessarily lessons learned), should entice strategists to a deeper reflection of the enemy's strategy. "What is of supreme importance in war is to attack the enemy's strategy; next best is to disrupt his alliances; next best is to attack his army," – Sun

Tzu.¹⁰ Campaign strategy must pivot around knowing the enemy and how alliances fit into the overarching strategic context. Sun Tzu also warned that “foreknowledge” and real-time battlefield knowledge are critical for continuous strategic assessment.¹¹ The reflection on Sun Tzu’s advice should entice a reassessment that serves to dictate future actions by weighing possible enemy reactions in the current environment.

The West references the Long War in terms of the last decade and maybe a decade or less into the future. Today’s global enemy differs, attempting to draw intrinsic support for its strategy from history dating back to events of the 13th century. Maybe they subscribe to Winston Churchill’s retort of, “The further backward you look, the further forward you can see.”¹² A deep look back to the attack on Baghdad in 1258 reveals an important underpinning of extremist Islamist strategy. During those times the threat of Mongol attacks sweeping the Arab lands forced a noted Islamic theologian named ibn Taymiyya to flee his home as a child.¹³ The destruction of Baghdad after the surrender of the “last Abbasid caliph”, and the subsequent “killing of 800,000 [Muslim] men, women, and children...while Christians were spared”, certainly influenced and shaped ibn Taymiyya’s argument to bring *jihad* to a status on par with the other “five pillars” of Islam.¹⁴ His assertion, “that *jihad* against apostates within the realm of Islam is justified – by turning *jihad* inward and reforging it into a weapon for use against Muslims as well as infidels – planted the seed of revolutionary violence in the heart of Islamic thought.”¹⁵ These notions of retribution continued to shape the revolutionary violence over the ensuing eight centuries.

Shortly after 9/11, an extremist Islamic cleric in Saudi Arabia, Safar al-Hawali released a letter to President Bush indicating that this history remains a relevant

concern.¹⁶ The extremist cleric's rhetoric made it apparent that the distance of historical atrocities did not lessen their strength to inspire. Leaders of today's most violent and extremist organizations frequently echo these sound bites.¹⁷ The rhetoric indicates the enemy's continued quest to gain popular strength for a broader strategy of engaging in retribution attacks. These attacks are not necessarily centered solely on the U.S, but against those who hold certain religious and ideological beliefs of immigrant ancestors. Linking historical atrocities of the 13th Century through perceived crusades today appears to resonate well in the extremist's recruits. Those recruits susceptible to radicalization are inculcated to see retribution not only as necessary, but mandated.

The need for "revenge" is not historically unique to any one specific culture, but more pronounced and even prescribed by some. History is replete with examples of revenge fueled by fear as a means to compel a call to action and recruitment. In a second *fatwa*¹⁸ issued in 1998 by a now well known extremist terrorist leader, fear is the theme.¹⁹ Historically inspired fear combined with the Pashtun tribal heritage and culture that spans the Afghanistan and Pakistan borders creates a virulent mix of revenge based enemy counter actions. A 2008 Naval Postgraduate School thesis on "The Evolution of Taliban" notes an intrinsic link between the Taliban and a predominantly Pashtun heritage. "While it would be incorrect to refer to the Taliban insurrection or resurrection as merely a Pashtun affair, it would not be far from the mark."²⁰

Pashtuns also hold a long tribal heritage predating Islam. Pashtuns are expected to live in accordance to *Pashtunwali* code. Violators of the code are subject to a *Jirga* (a tribal assembly of elders). Two key aspects of the code are *nang* (honor) and *badal* (revenge).²¹ *Nang* refers to family honor and *badal* to the "revenge killing," required to

restore honor. The revenge “can be immediate or occur generations later if the family whose honor was violated is in a weak position at the time of infraction.”²²

Both Sun Tzu’s advice to know one’s enemy and Churchill’s sage advice to explore history provide insight. The insight illuminates a threat of enduring revenge from enemy counter actions to current “risk-less” U.S. attacks. Accordingly, the U.S. must recognize the strategic dangers percolating from the expansion of remotely piloted aircraft kinetic power being applied to individual killings outside of direct force-on-force combat action. This is also more clearly pronounced when such strikes are against targets not perceived as clearly linked to imminent *vital* national interests.

If the U.S. does not provide the link, then not only will the enemy seek retribution, but fewer in the world may be compelled to partner with the U.S. to prevent those counter attacks. General McCrystal’s revised strategy for less kinetic operations in Afghanistan ground combat is clearly prudent based on history and the appreciation of immediate second order effects. The “distant risk-less warfare” provides an invitation for the enemy to bring the third order effects to U.S. soil. History and culture must inform over-all U.S. strategy, but an appreciation of the convergence of local and global environments further shapes and molds such strategy in the 21st century.

Ubiquitous Revolutions in Information

The victor often writes history. Therefore, lessons from the 13th century and others are constrained by the number of culturally relevant references from which one can draw conclusions. The environment of the 21st century is markedly different. Comments concerning global revolutions credit the former Secretary of State Henry Kissinger to a remark that we live in a “system of linkages that no previous generation had to face.”²³ A new age of global connectivity grows daily, shaping the current

environment with overwhelming amounts of information. As words matter, the word “information” is intentionally used and not the word “facts”. Today’s Long War strategic context is frequently shaped to a greater extent by information rather than facts.

A recent study “estimated that a week’s worth of the New York Times contains more information than a person was likely to come across in a lifetime in the 18th Century and estimated that 4 exabytes (1 exabyte = billion gigabytes) of unique information will be generated this year [2009]” alone.²⁴ The sheer amount of information requires strategic thinkers to adeptly plan and account for transparent operations. The U.S. Department of Defense’s 2009 Capstone Concept for Joint Operations (CCJO) outlined this harsh reality.

As a result of accelerating transparency and connectivity, traditional military operations have become increasingly sensitive to popular perceptions and attitudes, both domestic and international. Thanks to pervasive media coverage and the growing ubiquity of personal communications devices, much of the population can follow, closely and practically in real time, events they previously would have learned of only after the fact, if at all. In addition to complicating the preservation of operations security, that growing transparency risks turning what once could have been inconsequential military incidents into strategically significant events. Transparency will put greater pressure than ever before on commanders at all levels, whose every decision and action will be scrutinized and critiqued in real time by media whose independent access to information will be virtually impossible to restrict.²⁵

Transparency in military operations over the past two decades is not necessarily new in warfare because of increased “real-time” media-embeds. However, government and military organizations increasingly face challenges to tactics and methods used in previous conflicts. As an example, during the Vietnam War, the Central Intelligence Agency (CIA) conducted covert operations in the adjacent country of Laos. While some reports surfaced in prominent newspapers, the U.S. populous was not made aware of the CIA run Air America operation until nearly five years after its initiation.²⁶ A

declassified memo from May, 1964 outlines early efforts and how both U.S. and Laotian officials believed the operation would certainly be kept unknown.

I [U.S. Embassy counselor Leonard Unger], referred to US-piloted T-28's in Udorn which I said could be promptly converted to be indistinguishable from Lao T-28's and flown with considerable effectiveness in sorties against PL/VM in present situation. I said I had been assured this could be done without American involvement becoming known. Souvanna [Prince Souvanna Phouma] concurred in this action.²⁷

Thankfully, and owing a great deal of credit to the lack of globally connected modern communication devices, Unger was correct.

Today's warfare on extremist terrorists around the globe confronts an extensive network of devices. In stark contrast to Laos, as of 2008 there were approximately 8.5 million cell phones for a population of 28 million in Afghanistan. This comparatively meager number pales in comparison to the nearly 92 million cell phones and 18.5 million internet users for 175 million people in neighboring Pakistan.²⁸ Every one of those cell phones and internet connections are a potential asset ... and liability to on-going operations.²⁹ As an asset, during a visit to Lahore in October, 2009, U.S. Secretary of State Hillary Clinton touted their positive use for social networking when "she announced support from the United States for the first Pakistani mobile phone-based social network, known as Humari Awaz ("Our Voice"), which will be available using the free SMS shortcode 7111."³⁰ The flipside liability unravels any tactical success when that same cell phone's camera records "information" viewed as unfavorable without prior or immediately reconciled transparency.

The nearly 7,000 (as of 2007) combat action videos captured and uploaded on YouTube.com alone highlight the ability of "Monday morning quarterbacks" on both sides of the field to line up scrutinizing the conduct of warfare.³¹ Upon viewing an

assortment of them, some are official military released footage from manned and RPA sensors, while others are unofficial or clearly of cell phone camera like quality.

In many cases, not only do these video clips – when shown on mainstream [media] – contribute to the sense of chaos and disorientation among the population; they also often help to contradict the governments' version of events, thus helping terrorists to discredit their opponents by raising doubts about their sincerity.³²

Transparency and sincerity are not two words most Generals used as a standard lexicon describing combat operations years ago, but they are repeated frequently as critical strategic communicative tools in campaigns today.

In the technologically connected conflicts of this decade, Generals increasingly monitor more tactical missions in real-time. This lead to the rise of a new, but not so endearing phrase being coined: “The Tactical General.”³³ The risk of strategic implications from the engagement of any target in the crucible of low intensity conflict directly affronts airpower’s doctrinal hallmark of decentralized execution. Global connectivity and information ubiquity then underwrite centralized control and centralized execution when kinetic strikes are limited in scope or engage a high value targets of imminent *vital* national security interest. Generals today understand when engaging a terrorist target or insurgency fighters embroiled in a troops-in-contact firefight that, “an atrocity is not necessarily what one actually does, but what one is successfully blamed for.”³⁴ The strategic environment demands a leader’s acute awareness of implications to a less timely and transparent response to engagements than the enemy.

Information used from RPA kinetic engagements conducted outside of direct force-on-force engagements adds an increased degree of sensitivity. The risk of unintended or undesirable second and third order effects magnifies as the enemy capitalizes on this information. During the chaos of force-on-force combat, warriors do

occasionally make mistakes and some expected collateral damage occurs. Support actions by RPA operators likely blend into the reconciled force-on-force outcome of these engagements if no internationally accepted laws of war of proportionality and discrimination are violated by the *information* available. However, pundits call for retribution and for justification when *information* available points to the utilization of “risk-less” or purely asymmetric tactics by either side in a conflict. History bears evidence of this in the calls for the fire-bombing strikes on Japan after Pearl Harbor, the underlying premise of the Cold War arms race, the retribution strikes and wars following 9/11, and now unfortunately an extremist group’s enduring call to *jihad* following RPA strikes.

While provocative, the incidents are a reminder of the fragile nature of information immediately available after any combat engagement. Warfare for centuries has been described and conducted as a brutal battle between humans and sensitive to interpretation. The initial Western interpretation of RPA strikes conducted by operators 7,500 miles away from the targeted individual appears to be masked by the context of retribution at any cost. From the beginning, information surrounding the debate leading to the transformation of a simple RPA surveillance capability into a lethal combat instrument is scarce and appears contained to the highest levels of government.³⁵

Nearly five years after the first information on U.S. armed RPA strikes, P.W. Singer notes a remarkable dearth of debate. At a Washington, DC conference in December of 2006, where over two hundred of the top thinkers and leaders in America discussed the topic of “Rethinking of U.S. Military Revolution”, not even a “passing mention” was made of anything “unmanned or robotic”.³⁶ Five years after the first strike from an armed Predator and nary a word about the evolving robotic nature of warfare.

Even the recent Capstone Concept for Joint Operation's assessment of the strategic environment does not address the implications of this evolution. "War is therefore not action against an inanimate object, but is 'always the collision of two living forces.'"³⁷

Send In the Immortal...Leather Seat Warriors?

No the reference is not to the ancient Roman warrior's leather seat used in scythed chariots as an early revolution in military weaponry to better survive collisions with their enemies.³⁸ It does however, refer to those who remotely control armed drones called Predators (MQ-1), Reapers (MQ-9) and Sky Warriors (MQ-1C) operating in support of global counter-terrorist and global counter-insurgent missions. Singer, in *Wired for War*, sees the robotic development as the beginning of the true 21st century revolution in military affairs. "History may look back at this period as notable for the simultaneous loss of the state's roughly 400-year-old monopoly over which groups could go to war and humankind's loss of its roughly 5,000-year-old monopoly over who could fight in these wars."³⁹

Some may contend "not so fast." They will argue that this evolution is not all that new and certainly not that different than the changes introduced to the battlefield from the machine gun, the tank, or even manned aircraft themselves. From a purely tactical effects perspective, such arguments may resonate. When put in the strategic context of the hypothesis at hand, the argument flat-lines. The difference is the *risk* taken by the combatant. In this case the imminent battlefield *risk is not* taken by the "distant combatant," but rather displaced to another time or to another face. Consider the following comment, "[a] fleet of unmanned planes crawl like Piper Cubs but deliver real-time video from the battlefield *without risking* the lives of crew members, who can unwind afterward with a beer in their living rooms, or pick up dinner on the way home

from soccer practice.”⁴⁰ It refers to the reconnaissance mission and not the armed mission of RPAs, but the operational concept is one in the same.⁴¹ Reconnaissance missions do not directly hold enemy targets or individuals *at risk*. Armed RPAs absolutely hold the enemy *at risk*. Discussing differences of *risk* to combatants then likely invokes a follow-on comment of “what’s the difference from...?”

Negligible differences in tactical weapon’s effects exist between a combatant RPA operator’s strike and a similar manned platform strike. Contrasting the strategic effects in the context of warfare where two living forces are held *at risk* for political ends, the comparisons are miles apart. An armed RPA’s tactical effects are closely aligned to those of a fighter aircraft, such as the F-16, F-15E, F-18 or A-10. Fighter aircraft may appear to fly with the same impunity as RPAs today, but only because they all operate in an uncontested air supremacy environment. Fighter aircraft do face reduced *risk* in current conflicts while engaging similar targets with similar weapons, aimed and guided by similar sensors to those utilized by RPAs.

While air supremacy limits the airborne threat presented by the enemy in the battle-spaces of Iraq and Afghanistan, there are still significant *risks* taken by aircrew as combatants. First, they are subject to *risk* of enemy counter actions. Whether during low-altitude phases of flight, such as take-off and landing operations, or even while they sleep between combat missions at bases which are within the country borders of the conflict, they are *at risk*.⁴² Second, other airborne risks are not altogether absent. Aircraft malfunctions do occur and if required to “bail-out” in an inhospitable area while executing an attack or even a non-kinetic reconnaissance mission, aircrew *risk* death at the hand of the enemy. Regardless of the engagement’s nature, a combined air and

ground force attack or a solo air attack against an HVT/HVI, the “mortal combatants” are clearly and directly *at risk* while delivering lethal power in human-to-human interactive combat. While tactically similar, the combatants share *risk* on a common and immediate battlefield. This diminishes compelling or legitimate cases for an enemy’s strategy of retribution attacks beyond the direct area of conflict.

Other combatants fly into the combat area from bordering countries, aircraft carriers, or even bomber missions from the U.S., and are *at risk* for shorter durations. Nonetheless, their crews are still *at risk* while engaging the enemy during strikes, similar to the previous example. The human-to-human interaction is distanced, but the machine’s “mortal combatants” are still *at risk* on the battlefield while employing lethal power. The combatant being held *at risk* during the mission compels military and civilian leaders to face the *risk* of losing flesh and blood on the battlefield.

During high-intensity combat when *risks* are heavy on the battlefield, mixing the employment of less risky weapons into the targeting scheme merely blends their combatants into the fog and friction of war. One of those less risky weapons is the Tomahawk Land Attack Missile, or TLAM. First employed in Operation Desert Storm and then again in Operation Desert Fox, the missiles were fired by nearly *risk* free combatants that blended into the backdrop of a larger array of battlefield weapons and combatants.⁴³ “These attacks took full advantage of submarine covertness [for combatants].”⁴⁴ The covertness made the TLAM a weapon of choice for engaging terrorists during the last decade of the 20th century...but sparingly used as the sole weapon once in 1998 in retaliation for U.S. Embassy bombings in Africa.⁴⁵

Naval combatants just like those who would later fire the opening volley of missiles in Operation Enduring Freedom in Afghanistan, did so from various locations; some disclosed and others from an anonymous submarine location.⁴⁶ Officials contended that the second order effects from the attacks in Sudan and Afghanistan in 1998 would be minimal because the attack was a proportionate counter action to the Embassy bombings. Unfortunately, the attacks were less discriminating of civilians than desired. Somewhat expectantly, these “risk-less” actions emboldened and incensed the targeted violent extremist organization to conduct the follow-on attacks on the USS Cole and ultimately the second attack on the World Trade Center.⁴⁷ History demonstrated that second order effects from “risk-less” attacks are clear. The third order effect did occur in a time and place away from the initial battlefield. The first enemy counter action was not on U.S. soil against non-combatants, but against military combatants in their naval vessel. The attacks on 9/11 were clearly against non-combatants in the eyes of the international community and law. Unlike the swift retaliation for 9/11, no retributive attacks for the USS Cole were conducted.

Expanding “risk-less or risk-free” capabilities to the battlefield became a stated goal of the National Defense Authorization Act (NDAA) of 2001.⁴⁸ This direction from Congress and the events of 9/11 expedited the era of the 7,500 mile “risk-less” and perceived immortal combatant to the battlefield. The first claimed U.S. use of an RPA assisting in an HVI strike in Afghanistan occurred in November, 2001.⁴⁹ The strike assisted Navy F/A-18 fighters in successfully killing the highest ranking violent extremist group member in Afghanistan to date.⁵⁰ Less than two months later, on February 12,

2002, Secretary of Defense Donald Rumsfeld commented in a press conference on those new battlefield armed RPA weapon operations in Afghanistan.

The overwhelming bulk of all activity in Afghanistan since the first U.S. forces went in have been basically under the control of the Central Command. And that's particularly true after the first month. The one exception has been the armed Predators -- I shouldn't say "the one exception." An exception has been the armed Predators, which are CIA-operated. It's just a historical fact that they were operating these things over recent years, and they were in Afghanistan prior to the involvement of CENTCOM.⁵¹

Daniel Benjamin and Steven Simon, both former members of the National Security Council, contend that George Tenet, the director of the CIA raised his objection in a Principals meeting on September 4, 2001 to the agency taking the lead in transforming the Predator reconnaissance platform to one capable of armed strikes.⁵² However, events seven days later likely resolved the impasse. With retribution on the mind of the U.S. and the 107th Congress signing Public Law 107-40 (Authorization for Use of Military Force) on September 18th, this tactical move made initial strategic sense.⁵³ Fast removal of key extremist organization leaders responsible for the devastation was paramount. But few strategies are timeless and fewer survive in times of rapid change.

Eight years later, RPAs are a true force multiplier ensuring tactical success when blended into the fog of direct force-on-force combat action. When applied to broad spectrum conflict, using RPAs for targeting outside of direct force-on-force action, especially against individuals, builds anything but a clear path to strategic success. Tactical success continues to cloud critical or more rounded assessments of the strategic implications in protracted global conflicts. The allure of tactics that appear to mitigate immediate *risk* might very well create greater *risks* to combatants and civilians on U.S. soil, as well as *risk* breaking legitimate U.S. strategy. Notwithstanding

continued violent extremist organization rhetoric, history and Pashtun tribal code provide additional powerful reminders to realistic strategists of the duration of threat the U.S. faces. In the Long War, the strategic peril increases with every expanded use of RPAs as a perceived panacea for engaging a broad spectrum of HVT/HVIs. Particular concern of their use is warranted if leaders consider engaging a greater list of “kill or capture” individuals involved in support, but not direct combat action.⁵⁴

Utilizing RPAs in “challenged access” areas of the world should magnify concerns, not alleviate them. In these areas, the “risk-less” tactical ease of an RPA strike may compel their use, but opens the U.S. to long term strategic challenges outweighing the short term gain. The U.S. must carefully consider the certain increases to second and third order effects before expanding or authorizing such strikes. Today, those debates are waged in press reports and blogs, but rarely are readily apparent dialogues engaged in by high level officials to mitigate these effects by resolving legal, moral or ethical issues.⁵⁵ Recognized counter-insurgency expert David Kilcullen and U.S. politicians already highlight an increase to second order effects and risks from RPA activity.⁵⁶ Congressman Kucinich, in comments related to House Resolution 2278, stated on December 16, 2009, “if we want to stop anti-American incitement in the Middle East, we must end our military occupation of Iraq and Afghanistan, we must put an end to the drone attacks in Pakistan.”⁵⁷ Although U.S. officials do not discuss the operation in Pakistan, the world is more sophisticated and connected than the 1960’s.

Global news networks publish and openly discuss “drone strike” activity almost daily. The Google age of information ubiquity yields a plethora of articles. Routine Internet searches frequently yield Congressional testimony and statements similar to

one from James Dobbins Director, Center for International Security and Defense Policy RAND Corporation, “The utility of targeted killings employing Predator drones over Pakistan is debatable, but to the extent it is useful, there seems no good reason to limit the activity to the Northwest Frontier Province.”⁵⁸ The short term veracity of reports pales in comparison to the importance of long term impacts from third order effects. The U.S. openly released the “genie from the bottle” in 2002. Following Department of Defense guidance on transparency, the U.S. Air Force openly discusses the operational concept of RPA strikes and locations of those combatants.⁵⁹ Air Force RPA combatant operators and those around them will likely hold the greatest *risk* from enemy counter actions when retribution is sought on the expanded battlefield of suburban America.

Predator “Porn” – Immoral, or Just “Freaking Cool”⁶⁰

“War then is depicted as immoral, yet humanity has always found out-clauses to explain its necessity and celebration.”⁶¹ The cornerstone of the West’s strategic message against violent Islamic extremist terrorists is the immorality of perverting the Koran as an out-clause for a *jihad* that attacks innocent humans. International law recognizes that innocent civilians are not legitimate targets in war. The concept of combatants and non-combatants in war dates back to the Middle-Ages when warriors were provided legitimacy from warfare’s public “openness.”⁶² Openness “was seen partly as evidence of [war’s] ‘public’ nature and partly as the antithesis of perfidy and cowardly assassination, actions repugnant... to chivalry and the membership of the various knightly orders.”⁶³ These Westphalian definitions were intentionally meant to limit the scope of actors and actions in war, but their relevance is weakened for both sides when applied to 21st Century conflicts.

Military operators remotely controlling armed drones fall within the current definitions of “combatants” when executing missions in support of the wars on terror. The increase of civilian, contractor and non-state sanctioned armed actors in modern conflict creates clashes with historical international laws of war. This results in contentious ambiguity to the status of other RPA operators, such as civilians and contractors.⁶⁴ The status of enemy terrorists and insurgents is equally ambiguous and generates a great deal of debate over their “combatant” or “unprivileged enemy belligerent” status.⁶⁵ The briar patch of debates subsequently leads to claims of “extra-judicial” killings of these participants during conflict. The United Nations and human rights organizations are among those calling for specific answers to armed RPA attacks against individuals.⁶⁶ The debate gains legal, moral, and ethical imperatives when alleged and reported strikes take place outside of a force-on-force “direct battlefield” environment, especially when civilian “non-combatants” become collateral casualties.⁶⁷

Debates over enemy belligerent and civilian deaths from these attacks did not begin after the first U.S. armed RPA strike in Afghanistan. Ironically, in 2001 the U.S. denounced the use of “extra-judicial killings” of Palestinian militants by Israel. The U.S. Ambassador to Israel on July 8, 2001 stated, “The United States government is very clearly on the record as against targeted assassinations. They are extrajudicial killings, and we do not support that.”⁶⁸ Clearly this intended policy statement from 2001 contradicts U.S. strike actions conducted by armed RPAs against enemy belligerents or terrorists. If these strikes are left to be viewed as assassinations versus legitimate combat actions, the Long War second and third order effects will endure and U.S. legal, moral, and ethical high ground will crumble.

The definition of assassination and its applicability to enemy belligerents and terrorists is debated, but appears to remain unresolved. Presidential Order 12333, Paragraph 2.11, signed by President Reagan in 1981 and never reported to be rescinded by subsequent administrations, strictly prohibits assassination.⁶⁹ The strengthening of the previous 1974 version is attributed to fallout from the Church Commission report.⁷⁰ A 2002 Army War College paper analyzed and argued for a lift of the ban. The author noted the strategic value of assassination because of its “ultimate precision” in targeting without collateral damage.⁷¹ The author proposed a rewrite of the Presidential Order 12333, Paragraph 2.11 to expand to, “future targets including narco-terrorists, enviro-terrorists, or political, religious, and social leaders whether the head of state or not, who openly espouse mass murder and destruction through the use of weapons of mass destruction.”⁷² Clearly the proposed verbiage opens the use of this strategic weapon to a broader spectrum of individuals, but is meant to place a limit to cases where a clear link to U.S. *vital* security interests exists.

Resolving the legality and applicability of “assassinations” or targeted killings by armed RPA strikes is clearly not the intent or within the scope of this discussion. However, it is important for the analysis to note that RPA strikes differ from individual assassinations in that they are not “ultimately precise” and often result in collateral deaths. The drone strike’s signature prior to and after causing these deaths is also easier to determine after the fact when not masked by the chaos of major force-on-force engagements.⁷³ The sole death of an enemy terrorist by a sniper’s bullet or poisoned cigar is far more difficult to discern. But, as a former CIA lawyer recently noted, “People are a lot more comfortable with a Predator strike that kills many people than with a

throat-slitting that kills one.”⁷⁴ The statement clearly indicates a growing belief that this type of strike is “risk-less”, but is analytically deficient in today’s globally connected environment.

Failure to continually analyze the changing environment is illustrated by the international and domestic pressures the U.S. and Israel are both facing to justify these targeted attacks. The U.S. government’s initial vocalization of concerns against Israel’s practice years ago should not leave anyone surprised that international and domestic human rights organizations continue to voice these concerns today.⁷⁵ Human Rights Watch, an organization headquartered in New York, released a report in June, 2009. The report outlines the investigations and the forensic analysis conclusions of six attacks conducted outside of force-on-force engagements. The deaths in all cases were deemed to be the result of armed RPA attacks during an Israeli offensive against the Gaza strip from December 2008 to January 2009.⁷⁶ This increased global scrutiny highlights yet another warning to reevaluate future strategic implications.

Since a current U.S. National Security Strategy is not yet published, U.S. actions abroad indicate a continued emphasis on solving global insurgency.⁷⁷ Like Israel, the U.S. will continue to face increased scrutiny for attacks deemed not clearly linked to imminent *vital* national security interests or linked to direct force-on-force engagements. The scrutiny will be increased when attacks are conducted by armed RPAs, since both the U.S. and Israel are so vocal about the extreme “precision” employed by this new technology. The critic’s scrutiny draws strength from an RPA’s difficulty in always achieving the claims of the weapon’s precision, of the minimal collateral damage, and also of the operator’s ability to clearly discern who is an enemy and who is not from

persistence over the battlefield.⁷⁸ After the fact in depth investigations and forensic evidence tell one side of the story, but challenge these claims.⁷⁹

Precision and persistence are attributes touted for armed RPAs. Another is that “the real advantage of unmanned aerial systems is they allow you to project power without projecting vulnerability.”⁸⁰ This statement undoubtedly alludes to the vulnerability of two human forces sharing *risk* engaged in a force-on-force battle. This is true if the battlefield is limited to the area of direct lethal force-on-force actions. However, combatants delivering death with the push of a button from U.S. soil expands that battlefield...and the vulnerability. For a world so closely interconnected electronically and emotionally by information when disasters strike, trends in warfare likewise demonstrate real-time connectivity. “Projecting invulnerability” and actual enduring invulnerability are amazingly disconnected and detached in this context.

The disconnect stems from the rapid evolution of technologies over the past two decades. Technological success led to a corresponding rush to extrapolate tactical success to a larger strategic context against enemies engaged in a classic Sun Tzu Long War of exhaustion. Almost as if forecasting 21st Century warfare, Isaac Asimov remarked years ago, “The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.”⁸¹

As rapidly as Moore’s Law underwrites increases in militarized technology, society seems to desire a corresponding incorporation of technology that disconnects a human’s innate interaction in warfare’s life and death decisions.⁸² Evidence points to this desire in the National Defense Authorization Act of 2001, a 2003 Joint Forces Command report titled “Unmanned Effects: Taking the Human Out of the Loop,” a 2007

U.S. Army “solicitation” for unmanned systems to execute “fully autonomous engagement without human intervention,” a 2008 U.S. Navy “Concept for the Operation of Armed Autonomous Systems on the Battlefield,” and the 2009 U.S. Air Force “Unmanned Aerial System Flightplan.”⁸³ The road maps point to exponential increases in warfare by robotic means using artificial intelligence (AI) for surgical and precision engagement. These briefs or documents are largely available in full on the internet.⁸⁴ None of them calls for immediate transitions to autonomous AI engagements. Hopefully this indicates at least a temporary consideration for Napoleon’s theory, “In war, moral considerations account for three-quarters, the actual balance of forces only for the other quarter.”⁸⁵ However, other subject matter leaders lean further forward. They allude to near-term expectations of lethal combat decisions being made at the hands of AI – without a human, in or on-the-loop.⁸⁶

Current technologies claiming the capability to remove the operator from life and death decisions in “automatic” modes have less than flawless track records. AI is only as good as the initial logic programmed into lines of code. Systems such as the Aegis, Patriot missile battery, and MK₅ anti-aircraft system have all been involved in friendly-fire incidents over the past two decades.⁸⁷ Regardless the reasons for these incidents, these weapon systems are designed to be defensive - not offensive. Self-defense, regardless the method, is a commonly accepted principle and the use of AI in a defensive mode may blend and be reconciled in force-on-force warfare.

The U.S. Congressional “mandate by 2010 of one-third of all the aircraft designed to attack behind enemy lines [to] be unmanned” is hardly construed as defensive, but rather offensive in nature.⁸⁸ Offensive armed RPAs today perform life and

death decisions with a man-in-the-loop concept and current U.S. Air Force operational commanders call for a continued minimum application of man-on-the-loop operations.⁸⁹ Even today with a man-in-the-loop for RPAs, the world increasingly vocalizes over the growing use of these “risk-less” methods of war; some clamor for trials of human rights violations, while others gather around the Predator “live video feeds” to cheer the death of another enemy.⁹⁰

The tyranny of “distance” that David Grossman discusses in *On Combat* contributes to the vocalized disparity.⁹¹ Some in Lebanon and in the two major U.S. combat zones call the RPA strikes “cowardly because they send out machines to fight us...that they don’t want to fight us like real men, but are afraid to fight. So we just have to kill a few of their soldiers to defeat them.”⁹² Grossman’s theory expects these comments. He contends that the “one drawback to killing at long range is that greater distance has a reduced psychological effect on the enemy...since it is close-range, interpersonal aggression that truly frightens the enemy and modifies their behavior.”⁹³ Rather than compelling the enemy to retreat, these “risk-less” operations embolden them, thus widening the desire for enduring counter actions against the “distant risk-less” combatants.

Distance helps to override a human’s natural resistance to killing.⁹⁴ The physical distance obviously provides the lack of immediate physical risk when killing the enemy from the sanctity of an RPA operator’s leather arm chair. Emotional distance is a larger issue as the robotic force grows, even with man in or on-the-loop. Grossman’s book points to trends, but future studies may better quantify the risk of emotional distance in warfare. Less than complimentary comments from a couple of today’s RPA operators

provide some initial insight. “We all joke about it. A monkey can do this job,” comments an army Sergeant reconnaissance drone operator.⁹⁵ Pair that with a different operator’s view, “It’s like a video game. It can get a little bloodthirsty. But it’s f’ing cool.”⁹⁶ These are but a few of many similar documented comments. Continued comments will not convince skeptics and proponents alike that an appropriate amount of legal, moral and ethical training with the same rigor is applied across the board. Policy and a culture across all RPA operators must be emplaced to ensure they view the nature of war as more than a body count as when at home playing *Medal of Honor* or *Mortal Combat*.

Operators with previous flight experience may not be as prone to this emotional distance. As task transference applies to pilots when transferring from a simulated environment to the actual airplane, emotional transference is also likely.⁹⁷ Taking the job seriously, one air force officer recalled, “That the action felt so intense one time when his drone thousands of miles away was about to crash, he instinctively reached for the ejection seat.”⁹⁸ Ethical awareness of warfare norms and emotional maturity help emplace a culture guided by applying the principles of proportionality and discrimination when employing lethal power from the leather chair. If not applied and later discovered by critics and enemies, the strategic impact of increased anti-U.S. sentiment may again lead to enduring retribution against combatants on U.S. soil.

Long War Strategic Risks – Coming to a Home Theater Near You

Proportionality, or really the lack thereof, underwrites the theme of the Nuclear War theory of Mutually Assured Destructive (MAD). From a relativist point of view, MAD may seem proportional, but viewing the destruction of two societies is hardly proportional. Thankfully, *that* “7,500 mile trigger” has never been pulled. The “trigger” refers to nuclear tipped intercontinental ballistic missiles (ICBM), but the push of the

“7,500 mile pickle button” delivering death from an RPA foreshadows a chilling and parallel strategic risk. With over 40 countries already developing and/or employing RPAs, the new robotic weapons race in the Long War is just beginning.⁹⁹ Unlike the Cold War, the race is currently unbound by even perceived international norms or non-proliferation treaties.

During the Cold War, some nuclear combatant operators sat in leather chairs deep inside ICBM silos protected from enemies 7,500 miles away with their finger on the trigger. Some still sit there today, but the *risk* in nuclear warfare is still largely held by the civilian populace. Potential targets for the enemy’s reaction include military targets, but the list is longer for civilian targets.¹⁰⁰ The *risk* in the Cold War arms race left both sides attempting to provide security from the other, but in those attempts they saw expenditures of “billions of dollars on high-tech weapons systems that paradoxically made them feel more insecure.”¹⁰¹ A quick Internet scan today illuminates the fears of the robotic warfare expansion and a corollary to the Cold War “security dilemma.”¹⁰²

The immediate security dilemma is not to outpace a developing competitor like China or to deny a non-state actor’s use of RPAs.¹⁰³ Rather, the security dilemma is the *risk* felt on U.S. soil from the “first ever use” of lethal power from a combatant operator’s seat 7,500 miles away from the enemy. This *risk* has yet to drive civilians in Nevada to build “fall-out shelters” or to conduct “duck and cover drills.” However, one can only imagine the U.S. societal changes and economic impacts that would certainly follow an enemy counter-attack on a combatant RPA operator sleeping between combat shifts in their suburban home.

Leaders in the RPA community voice concerns of a *risk* to attacks. The U.S. Air Force Director of Intelligence, Surveillance and Reconnaissance Innovations commented that, “We are taking very seriously in the United States the notion of insurgency teams coming surreptitiously in the states and trying to attack our bases.”¹⁰⁴ Such warnings have not prompted policy changes to RPA employment. The analysis is also deficient, as military bases pose a greater challenge to attack than a suburban home. The enemy and unfortunately many around the world would likely view an attack in suburban America against RPA operators as justified by a comparison to the U.S. targeting of individuals outside of direct force-on-force combat action.

The reported expansion of the use of armed RPAs over the past year in current conflicts illuminates additional strategic concerns. While officially acknowledged use of RPA strikes dates back to 2002, the most alarming expansion may not be the actual reported use, but more so in the prolific world-wide reporting and discussion of their use in Congressional testimony and mainstream media. A *60-Minutes* special aired in May, 2009 clearly outlines the operational concept of RPA employment.¹⁰⁵ Again a feature story in the March, 2010 *Popular Mechanics* magazine details the operations and insights to the future.¹⁰⁶ The incredible growing quantity of unofficial or alleged reports of attacks in areas outside of coalition force-on-force engagements should also be of great concern in the expansion of robotic warfare. By now it is crystal clear around the world, who, where, and how the U.S. operationally employs this distant lethal weapon.

Reported RPA strikes in the future, fully corroborated or not, will continue to lead enemies to assume operators 7,500 miles or more from the point of death conducted the “risk-less” attacks. That assumption greatly increases the reality of *risk* to enemy

counter attacks being held by combatants and those around them on U.S. soil. Recent “interpretive guidance” offered by the International Committee of the Red Cross and arguments by U.S. lawyers attempt to classify non-state militants and terrorists into the Westphalian definitions of “combatant” and further to justify actions against them.¹⁰⁷

These attempts lend justification for the U.S. and others to authorize RPA operator attacks on individuals outside of direct force-on-force combat, but in doing so may unwittingly unravel a strategy that seeks to minimize long term attack on home soil. In a not so complimentary irony, these clarifications potentially open the door to the international eye viewing these enemy counter attacks on U.S. soil as legitimate combatant versus combatant actions and would be tantamount to a great reversal of strategy. However, in a great “Catch-22,” the failure to classify and justify the actors and actions of 21st Century conflict risks the targeted killings by RPA operators being viewed as illegal acts of war.

Regardless of these debates’ outcome, RPA warfare will continue to gain the front line press and scrutiny it deserves. Reminiscent of enduring thoughts of the nuclear age, any hopes of completely “putting the genie back in the bottle” are false. The *risk* to RPA operators will increase with every Hellfire missile fired or bomb dropped that is not in direct support of force-on-force combat. The *risk* unfortunately will not be theirs alone to hold when they most vulnerable during breaks between “combat.”

Unless the U.S. engages in decisive action soon, the allure of technological prowess that spurred a rush to embrace tactical success as a key to strategic victory, will instead begin to weaken its own desired strategic outcome. Using the 7,500 mile “distant risk-less” weapon for the first time in history began a crack on the surface ice of

an early spring lake. Without a clear legal, moral and ethical framework supporting armed RPA actions the ice will surely crack under the weight of pressure applied by the changing global environment today. Senator Pat Roberts paraphrased Ralph Peter's reflection of another empire's failure to adapt prior to the ice giving way, "The Romans so cherished their civilized image of themselves that it blinded them to the strengths of the barbarians, and Rome's greatest failure was its inability to understand the changing world."¹⁰⁸ It is certain that no one in the U.S. wants to read a history book in the future that draws this same parallel to the fall of a modern day great power.

50,000' Recommendations

"Duck and cover" drills will not solve this problem. As Admiral Blair, the Director of National Intelligence testified in February, 2010 before a Senate Committee, the blind-eye solution is not tenable; the probability of threat to another attack on U.S. soil is all but "certain."¹⁰⁹ The current path forward seems anything but clear. Transparency and clarity are, however, ways to begin to counter the scrutiny and clear some of the fog in this globally connected world.¹¹⁰ The U.S. Air Force "Unmanned Aerial System Flightplan" does call for the path of transparency and clarity in, "communicating timely, accurate, and truthful information to American and world audiences is integral to mission success and directly supports Department of Defense policy of "maximum disclosure with minimal delay."¹¹¹

Communicating U.S. intent by actions clearly linked to imminent *vital* national security interests is critical. It should not have gone unnoticed that not a single mention of al Qaeda or Usama Bin Laden (UBL) was made to this point. The intent was to communicate a clear message. These two proper nouns are two of the most over-used in the U.S. lexicon today and seem to prevent clear intent and *vital* interests from being

conveyed. The elevation of a single non-state actor to pseudo “super-power” status materially aids the enemy in long term recruiting efforts. It also seems to influence thought to aggregate all terrorists and insurgents into a single category that rise to the level of perceived imminent *vital* interests. Certainly this is an untenable categorization.

However, a clear indication of this thought may be communicated by actions to the world if there is any veracity to reports in February, 2010 of an RPA strike in Pakistan against a Federal Bureau of Investigation’s (FBI) most wanted terrorist, Jamal Saeed Abdul Rahim. As this terrorist is classified by the FBI as a member of the Abu Nidal Palestinian terrorist organization, the attack further complicates the U.S. reported use of RPAs for what seems immediately apparent as a perceived law enforcement activity for his action in a 1986 airplane hijacking.¹¹² Without justification for his “material impact” to a current conflict that posed a risk to imminent *vital* interests, the attack will further blur and confuse the line between combat and law enforcement actions.

Immediate efforts must be taken by the U.S. to determine a tenable long term strategy that reduces, not increases enduring second and third order effects to attacks on U.S. soil. Acknowledging this may require past and future RPA strikes conducted outside of direct force-on-force combat to be reconciled transparently with demonstrated links to imminent U.S. *vital* security interests. The discussion herein illustrates the enduring vulnerability and *risk* from these actions to U.S. interests and citizens on home turf. The origin of *risk* stems from the fact that the U.S. initiates and executes “combat” life and death decisions on the home field for the first time since the Spanish-American War of 1898. Most importantly today, that *risk* should compel U.S. leaders to rapidly

reconcile the legal, moral and ethical shortcomings of “delivering death” from 7,500 miles away and the corresponding considerations for a rapid push to robotic warfare.

An RPA’s merit as additional firepower in force-on-force engagements executing lethal and deadly force is compelling. The strategic merit outside of these engagements is tenuous at best in all cases except an imminent *vital* security interest. By narrowing this focus, leaders may restrain from the use of “distant risk-less” warfare by considering the context and magnitude that previous leaders contemplated before authorizing the key to be turned and the “trigger pulled” unleashing a lethal 7,500 mile weapon. The *risk* is enduring and directed toward U.S. soil. Does the *risk* in today’s environment, shaped by history’s strategic context, with a cultural awareness of our enemy’s alliances ability to utilize globally interconnected information warrant the current strategy?

Extremely infrequent occasions may present the existence of a “clear and present danger” to national *vital* security interests. The armed RPA was conceived under those circumstances when it was believed to be the only way to remove a threat of that magnitude from the face of the Earth. In that case, few would successfully debate that the legal, moral, or ethical risks outweighed the use of the “risk-less” and less than “ultimately precise” RPA weapon. The threat to some second and third order effects would still exist, but arguably illegitimate and to a much lesser degree. The threat of enemy retribution attacks from current and past RPA targeted killings will not disappear overnight. The “genie is out of the bottle” and previous fire-pulses to the 7,500 mile weapon cannot be recalled or self-destructed. MAD is not assured, but this current weapon’s expanded use will lengthen the Long War and unnecessarily endanger and hold our civilian populace *at risk*.

The concept of “*at risk*” must be weighed now and with future warfare advances. While not advocating the U.S. secede its overwhelming advantage in the field of battle, knowingly expanding the battlefield to U.S. soil transfers an additional enduring *risk* to the civilian populace similar to nuclear warfare retaliation and is unacceptable. The U.S. Air Force also advocates evaluating *strategic risks* before moving forward, “Ethical discussions and policy decisions must take place in the near term in order to guide the development of future UAS capabilities, rather than allowing the development to take its own path apart from this critical guidance.”¹¹³ Unfortunately those words were not put into a doctrinal document until less than a year ago...over seven years after the first time death was delivered from nearly 7,500 miles away. To retain true world superpower legitimacy, the U.S. must lead the effort to limit the use of “distant warfare” and lead meaningful legal, moral, and ethical debates. The world is watching to follow the lead of the U.S. as robotic warfare rapidly advances forward. Hopefully the guiding voice of General Robert E. Lee who witnessed great death on the battlefield is heard, “It is good that we find war so horrible, or else we would become found of it.”¹¹⁴

Endnotes

¹ Nano wingmen refers to emerging technologies of miniature robotic vehicles.

² P.W. Singer, *Wired for War* (New York: The Penguin Press, 2009): 173-174.

³ Expansion of the “kill or capture” high-value individual/target list is referenced in one Congressional document and an OpEd in *The New Yorker*. U.S. Congress, Senate Committee on Foreign Relations, *Afghanistan’s Narco War: Breaking the Link Between Drug Traffickers and Insurgents*, 111th Congress, 1st Session, August 10, 2009, 15-16, <http://www.newsweek.com/media/5/Afghan-Narco-War.pdf> (accessed January 29, 2010). This assertion is also made by Jane Meyer, “The Predator War,” *The New Yorker*, 85, no. 34 (October 26, 2009): 6, in ProQuest (accessed January 29, 2010).

⁴ For an example see David Kilcullen, “Crunch Time in Afghanistan-Pakistan (This is an edited version of a statement before the Senate Foreign Relations Committee hearing on

Afghanistan, chaired by Senator John F. Kerry, on 5th February 2009)," *Small Wars Journal*, February 9, 2009, <http://smallwarsjournal.com/blog/2009/02/crunch-time-in-afghanistanpaki/> (accessed February 28, 2010). David Kilcullen also is quoted on this impact in Doyle McManus, "U.S. Drone Attacks in Pakistan 'Backfiring,' Congress Told," *Los Angeles Times*, May 3, 2009, <http://articles.latimes.com/2009/may/03/opinion/oe-mcmanus3> (accessed March 4, 2010).

⁵ There are multiple requests to the United States government over the last year. For issues raised by Philip Alston, the United Nations Special Rapporteur on Extrajudicial Executions see "US Warned on Deadly Drone Attacks," *BBC News*, October 28, 2009, <http://news.bbc.co.uk/2/hi/americas/8329412.stm> (accessed December 2, 2009). The American Civil Liberties Union has now gone so far as to file a Freedom of Information Act Lawsuit against the U.S. Departments of State, Justice and Defense. They are also appealing a denial of information from the Central Intelligence Agency. For specifics see "ACLU Seeks Information On Predator Drone Program," *American Civil Liberties Union*, March 16, 2010, <http://www.aclu.org/national-security/aclu-seeks-information-predator-drone-program> (accessed March 16, 2010). For comments from the Honorable Dennis J. Kucinich, U.S. House of Representatives see endnote 57. These are only three official reports, but there are scores more in world-wide news reporting and op-ed articles like the one from Jane Meyer (endnote 3).

⁶ 60 Minutes, *Drones: America's New Air Force*, Internet Video (New York: CBS News – 60 Minutes, May 10, 2009), <http://www.cbsnews.com/stories/2009/05/08/60minutes/main5001439.shtml>, (accessed August 2009)

⁷ S.J. Daunt, "Newton's Three Laws of Motion," September 5, 2005, <http://csep10.phys.utk.edu/astr161/lect/history/newton3laws.html> (accessed February 7, 2010)

⁸ The shooting deaths of 13 people at Fort Hood, Texas by Major Nidal Hassan and the arrests of two American women in March indicate the growing reality of "homegrown" terrorists discussed in a 2008 Congressional report, U.S. Congress, Senate, Committee on Homeland Security and Governmental Affairs Majority & Minority Staff Report, "Violent Islamist Extremism, the Internet, and the Homegrown Terrorist Threat," May 8, 2008, Majority and Minority Staff Report, http://hsgac.senate.gov/public/_files/IslamistReport.pdf, (accessed March 16, 2010). Lorenzo Vidino, "The Homegrown Terrorist Threat to the US Homeland," linked from the *Belfer Center for Science and International Affairs, John F. Kennedy School of Government, Harvard University* at "Experts, Hassan Abas, The Homegrown Terrorist Threat to the US Homeland," http://belfercenter.ksg.harvard.edu/publication/19824/homegrown_terrorist_threat_to_the_us_homeland.html?breadcrumb=%2Fexperts%2F850%2Fhassan_abbas (accessed March 16, 2010). Sam Jones, "Muslim Convert Colleen LaRose, aka Jihad Jane, Faces Terror Charges," March 10, 2010, <http://www.guardian.co.uk/world/2010/mar/10/colleen-larose-jihad-jane-charges> (accessed March 16, 2010).

⁹ The reference to "legitimate" stems from current and past U.S. administration arguments. "The Obama, Bush, and Clinton administrations each (apparently) believed that they were on firmer legal ground going after "combatants" in an "armed conflict" than relying on the customary law of self-defense as an independent ground for the use of force. Certainly it sounded better, as a law-PR matter, to say that one was targeting "combatants." However, if viewed as combatants in an armed conflict, then enemy counter actions against other combatants are equally lawful in the current context of international law. This affords these "legal combatants" or their organizations the opportunity to conduct legitimate counter attacks. For one recent example of a lawyer at the Washington College of Law discussing the future and current legal

implications see Kenneth Anderson, "Predators Over Pakistan," *Weekly Standard.com*, 15, no. 24, March 8, 2010, <http://www.weeklystandard.com/articles/predators-over-pakistan> (accessed March 10, 2010), 8.

¹⁰ Sun Tzu, *The Art of War*, Samuel B. Griffith, trans, (New York: Oxford Univ. Press, 1963, 1973): 77-78.

¹¹ Ibid, 144.

¹² Singer, *Wired for War*, 6.

¹³ Daniel Benjamin and Steven Simon, *The Age of Sacred Terror: Radical Islam's War Against America* (New York, NY: Random House, Inc., 2002), 43-44.

¹⁴ Ibid, 43, 49.

¹⁵ Ibid, 50.

¹⁶ As quoted in Benjamin, *The Age of Sacred Terror*, 188-9. "America will eventually pay for its enormities, because Muslims never forget the wrongs they have suffered and they inculcate hatred for their most ancient enemies in their newest converts...We don't forget our tragedies no matter how much time has passed. Imagine, Mr. President, we still weep over Andalusia and remember what Ferdinand and Isabella did there to our religion, culture and honor! We dream of regaining it. Nor will we forget the destruction of Baghdad, or the fall of Jerusalem at the hands of your Crusader ancestors...It may be a problem for us, but who will pay the price after a while?...if you destroy every country on your list of terrorists, will that be the end or only the beginning?"

¹⁷ For evidence of this rhetoric, some news reporting of recent video clips of the American born extremist Al Qaeda member Adam Gadahn who has been charged with treason against the U.S. see "American Al Qaeda Member Talks About Jewish Roots," *CBS News Channel 2 Webpage*, June 14, 2009, <http://cbs2.com/local/Adam.Gadahn.al.2.1043973.html> (accessed March 16, 2010).

¹⁸ *Fatwa*: a Muslim legal opinion or edict. As defined in Benjamin, *The Age of Sacred Terror*, 489.

¹⁹ Usama bin Laden as quoted in Benjamin, *The Age of Sacred Terror*, 149. "Despite the great devastation inflicted on the Iraqi people by the crusader-Zionest alliance, and despite the huge number of those killed, which has exceeded 1 million...despite all this, the Americans are once [again] trying to repeat the horrific massacres, as though they are not content with the protracted blockade imposed after the ferocious war or the fragmentation and devastation...So here they come to annihilate what is left of this people and to humiliate their Muslim neighbors."

²⁰ Thomas H. Johnson, "On the Edge of the Big Muddy: The Taliban Resurgence in Afghanistan," *China and Eurasia Forum Quarterly*, 51, no. 2 (2007), 122.

²¹ Shahid A. Afsar and Christopher A. Samples, *The Evolution of the Taliban*, Master's Thesis (Monterey, CA; Naval Postgraduate School, June, 2008), 27.

²² Ibid.

²³ Henry Kissenger, quoted in Erik Peterson, speech, *Western Governors Association*, 2008, www.westgov.org/wga/meetings/am2008/ErikPeterson.doc (accessed March 17, 2010).

²⁴ Laura Bestler, Karl Finch, Scott McLeod, *Did You Know 4.0*, Internet Video (Portland, OR: XPLANE, September 16, 2009), <http://www.chrisrawlinson.com/2009/09/new-2009-did-you-know-video-4-0-september-update> (accessed February 3, 2010)

²⁵ Michael G. Mullen, *Capstone Concept for Joint Operations, Version 3.0*, (Washington, DC: U.S. Joint Chiefs of Staff, January 15, 2009), 5.

²⁶ William M. Leary, "Supporting the 'Secret War'," *Central Intelligence*, May 08, 2007, <https://www.cia.gov/library/center-for-the-study-of-intelligence/kent-csi/docs/v43i3a07p.htm> (accessed February 9, 2010).

²⁷ U.S. Department of State, "Telegram From the Embassy in Laos to the Department of State, Washington, DC, May 17, 1964," *Foreign Relations of the United States, 1964-1968, Volume XXVIII, Laos*, http://www.state.gov/www/about_state/history/vol_xxviii/45_55.html (accessed February 9, 2010).

²⁸ "CIA - the World Factbook, Pakistan," *Central Intelligence Agency*, <https://www.cia.gov/library/publications/the-world-factbook/geos/af.html> (accessed February 12, 2010).

²⁹ The Director of the Central Intelligence Agency, Leon Panetta answered directly to questions of these "on-going" operations in a Commonwealth Club forum held in San Francisco, California. "Obviously, I'm not going to talk about the operations we conduct [pause] in Pakistan in particular, because it is a covert operation. Let me make very clear [interrupted by audience member], the method, what we try to do, and I can assure you that we do this, is that when we use this it is a very precise and it limits collateral damage. Now there are others that are operating in that part of the world. The military has drones, others have those facilities as well." "CIA Director Leon Panetta Commonwealth Club," *Fora.tv*, October 23, 2009, http://fora.tv/2009/10/23/CIA_Director_Leon_Panetta#fullprogram (accessed February 27, 2010).

³⁰ "U.S. Secretary of State Encourages Use of New Media Communications in Pakistan: 'Our Voice' Cell Phone Social Networking on #7111," *USAID/Pakistan*, October 29, 2009, <http://www.usaid.gov/pk/newsroom/news/general/091029e.html> (accessed February 11, 2010).

³¹ Singer, *Wired for War*, 320, 390.

³² Peter R. Neumann and M.L.R. Smith, *Strategy of Terrorism*, (Taylor & Francis Group LLC-Books, 2007), 49.

³³ Singer, *Wired for War*, 350.

³⁴ Montgomery McFate and Andrea V. Jackson, "The Object Beyond War: Counter-Insurgency and the Four Tools of Political Competition," *Military Review*, (January/February, 2006), 14.

- ³⁵ Benjamin, *The Age of Sacred Terror*, 343-346.
- ³⁶ Singer, *Wired for War*, 191.
- ³⁷ Mullen, *Concept for Joint Operations*, 8.
- ³⁸ Arthur Ferrill, *The Fall of the Roman Empire, the Military Explanation* (New York, NY: Thames and Hudson, Ltd., 1986), 112.
- ³⁹ Singer, *Wired for War*, 267.
- ⁴⁰ Brian Mockenhaupt, "We've Seen the Future and It's Unmanned," *Esquire* Vol. 152, Iss. 5 (November, 2009): 130, in ProQuest (accessed November 15, 2009).
- ⁴¹ Lara Logan, *Drones: America's New Air Force*, Internet Video (New York: CBS News – 60 Minutes, May 10, 2009), <http://www.cbsnews.com/stories/2009/05/08/60minutes/main5001439.shtml>, (accessed August 2009)
- ⁴² For the most recent report on one of many attacks on coalition bases in Afghanistan or Iraq see Associated Press News, "Rocket Attack Kills 1 at NATO Base in Afghanistan," *FOX News*, March 15, 2010, <http://www.foxnews.com/world/2010/03/15/rocket-attack-kills-nato-base-afghanistan-1101787902/>, (accessed March 15, 2010).
- ⁴³ Dietrich Kuhlmann, "Submarine Strike Comes of Age," *Navy*, http://www.navy.mil/navydata/cno/n87/usw/issue_7/submarine_strike.htm, (accessed February 23, 2010).
- ⁴⁴ *Ibid.*
- ⁴⁵ Craig O. Haynes, *US Counterterrorism vs the New Terrorism: Leadership and Strategy are the Keys to Success*, Master's Thesis (Quantico, VA; United States Marine Corps Command and Staff College, Marine Corps University, January 07, 2002), 39.
- ⁴⁶ "Pentagon: Strikes a Success," *ABC News Homepage*, October 8, 2001, <http://abcnews.go.com/print?id=92344>, (accessed February 20, 2010).
- ⁴⁷ Haynes, *Counterterrorism vs New Terrorism*, 42.
- ⁴⁸ Singer, *Wired for War*, 60.
- ⁴⁹ Benjamin, *The Age of Sacred Terror*, 349.
- ⁵⁰ *Ibid.*, 349.
- ⁵¹ Donald Rumsfeld, "News Transcript," U.S. Department of Defense, February 12, 2002, <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=2636> (accessed February 12, 2010).
- ⁵² Benjamin, *The Age of Sacred Terror*, 345. For additional comments on the beginning of remotely piloted armed aircraft operations issues between the Central Intelligence Agency and the U.S. Air Force see Singer, *Wired for War*, 35.

⁵³ U.S. Congress, "Authorization for Use of Military Force," Public Law 107-40, S.J. Res. 23, 107th Congress, 1st Session, September 18, 2001.

⁵⁴ For reference to Afghanistan drug traffickers being added as additional targets to the joint integrated prioritized targeting list see endnote 3. *Afghanistan's Narco War*, 15.

⁵⁵ Anderson, "Predators Over Pakistan," 1.

⁵⁶ Kilcullen, "Crunch Time in Pakistan."

⁵⁷ Dennis J. Kucinich, "A Bill to Direct the President to Transmit to Congress a Report on Anti-American Incitement to Violence in the Middle East," *Congressional Record*, 155, no. 192, December 17, 2009.

⁵⁸ James Dobbins, Testimony for "Strategic Resources For Afghanistan", Committee: House Oversight And Government Reform, Subcommittee: National Security And Foreign Affairs (March 26, 2009), in LexisNexus Congressional (accessed February 28, 2010).

⁵⁹ United States Air Force, "USAF Unmanned Aerial Systems Flight Plan," <http://www.scribd.com/doc/17312080/United-States-Air-Force-Unmanned-Aircraft-Systems-Flight-Plan-20092047-Unclassified>, (accessed March 1, 2010).

⁶⁰ For the quote attributed to a young air force lieutenant at an undisclosed military base when describing coordinating unmanned airstrikes in Iraq, "It's like a video game, the ability to kill. It's like...[he pauses, searching for the right words] freaking cool" see Singer, *Wired for War*, 395.

⁶¹ Singer, *Wired for War*, 6.

⁶² Kenneth Watkin, *Warriors Without Rights? Combatants, Unprivileged Belligerents, and the Struggle Over Legitimacy*, Program on Humanitarian Policy and Conflict Research Harvard University Occasional Paper Series, (Boston: Harvard University, Winter 2005), 12.

⁶³ G.I.A.D. Draper, "The Status of Combatants and the Question of Guerrilla Warfare," *British Year Book of International Law* 45 (1971), 173-174.

⁶⁴ Gary Solis, "CIA Drone Attacks Produce America's Own Unlawful Combatants," *Washington Post*, March 12, 2010, <http://www.washingtonpost.com/wp-dyn/content/article/2010/03/11/AR2010031103653.html> (accessed March 12, 2010).

⁶⁵ For an in depth discussion see Watkin, *Warriors Without Rights?*

⁶⁶ See endnote 5 for specifics.

⁶⁷ As evidence of this disparity, the reporting on 12 civilian casualties from a claimed HIMARS missile strike in during force-on-force conflict in Marja, Afghanistan on February 14, 2009 was quickly overcome by reporting on the claimed NATO aircraft strike on a bus full of "non-combatants" driving down an Afghanistan road on February 22, 2009. The air strike prompted formal apologies from senior military commanders in Afghanistan. See C. J. Chivers and Rod Nordland, "Errant U.S. Rocket Strike Kills Civilians in Afghanistan," *New York Times*,

February 14, 2010, <http://www.nytimes.com/2010/02/15/world/asia/15afghan.html?partner=rss&emc=rss> (accessed March 1, 2010 and “Afghanistan Condemns Deadly NATO Air Strike in Uruzgan,” *BBC News*, February 22, 2010, http://news.bbc.co.uk/2/hi/south_asia/8528715.stm (accessed March 1, 2010).

⁶⁸ Joel Greenberg, “Israel Affirms Policy of Assassinating Militants,” *New York Times*, July 5, 2001, <http://www.nytimes.com/2001/07/05/world/israel-affirms-policy-of-assassinating-militants.html> (accessed November 15, 2009).

⁶⁹ Ronald Reagan, “Executive Order 12333--United States intelligence activities,” *National Archives*, <http://www.archives.gov/federal-register/codification/executive-order/12333.html#2.11> (accessed February 27, 2010).

⁷⁰ Victor D. Irvin, *Political Assassination, the Strategic Precision Weapon of Choice*, Strategy Research Project (Carlisle Barracks, PA: U.S. Army War College, May 30, 2002), 14.

⁷¹ *Ibid*, 2.

⁷² *Ibid*, 2.

⁷³ Marc Galasco et al., “Precisely Wrong, Gaza Civilians Killed by Israeli Drone-Launched Missiles,” *Human Rights Watch*, June 30, 2009, <http://www.hrw.org/en/reports/2009/06/30/precisely-wrong-0> (accessed November 15, 2009), 3.

⁷⁴ Meyer, “The Predator War,” 2.

⁷⁵ See endnote 5 for claims.

⁷⁶ Galasco, “Precisely Wrong, Drone Missiles,” 3.

⁷⁷ For an expanded assessment of an U.S. Army *Parameters* article that cites a 2008 RAND report that postulated, “[The U.S.] has subordinated strategic clarity to the moral clarity it strives for in foreign policy and may have set the United States on a course of open-ended and gratuitous conflict with states and non-state entities that pose no serious threat to the United States,” see Daniel S. Roper, “Global Counterinsurgency: Strategic Clarity for the Long War,” *Parameters* (Autumn 2008): 1. For another corollary theory from David Kilcullen postulating the need for global counterinsurgency instead of counter terrorism against the extremist Islamic *jihad*, see David Kilcullen, “Countering Global Insurgency,” *Small Wars Journal* (November 30, 2004), <http://smallwarsjournal.com/documents/kilcullen.pdf> (accessed February 28, 2010).

⁷⁸ For a short analysis of why drones may fall short in meeting some of these expectations see James Jinnette, “Unmanned Limits, Robotic Systems Can’t Replace a Pilot’s Gut Instinct,” *Armed Forces Journal*, <http://www.afji.com/2009/11/4302459/> (accessed December 2, 2009).

⁷⁹ For multiple references to investigative on-site interviews, forensic evidence of weapon circuit boards, and weapon tungsten fragments sent to Norway for analysis see Galasco, “Precisely Wrong,” 6.

⁸⁰ David Deptula, “U.S. Military Use of Drones,” *CNN Transcripts*, November 29, 2009, <http://transcripts.cnn.com/TRANSCRIPTS/0911/29/ampr.01.html> (accessed February 26, 2010).

⁸¹ Singer, *Wired for War*, 94.

⁸² Moore's Law refers to the exponential increases in computing capability of processors.

⁸³ Singer, *Wired for War*, 128, quotes all documents except the following, United States Air Force, *USAF Unmanned Aerial Systems Flight Plan*, (Washington, DC: U.S. Department of the Air Force, May 19, 2009), 3.

⁸⁴ For reference to the Joint Forces Command Document see Ron Schafer, "Robotics to Play Major Role in Future Warfighting," *Roland Piquepaille's Technology Trends Webpage*, July 29, 2003, <http://radio-weblogs.com/0105910/2003/08/10.html>, (accessed March 1, 2010). For other references see United States Air Force, "USAF Unmanned Aerial Systems,"; John S. Canning, "A Concept of Operations for Armed Autonomous Systems," Powerpoint slides, Naval Surface Warfare Division, Dahlgren Division, http://www.dtic.mil/ndia/2006disruptive_tech/canning.pdf, (accessed March 1, 2010); US Army Research, Development, and Engineering Command (RDECOM), "Army - SBIR 07.2 Proposal Submission Instructions," (US Army RDECOM; Ft Belvoir, VA) <http://www.acq.osd.mil/osbp/sbir/solicitations/sbir072/army072.pdf> (accessed March 1, 2010), 52.

⁸⁵ Singer, *Wired for War*, 314.

⁸⁶ Lieutenant General Rick Lynch, U.S. Army Commanding general at Fort Hood, Texas, recently stated, "I believe we can do automatic target recognition...to allow that [shooting without a human in the decision loop] capability. Autonomously." For quote see Stew Magnuson, "Truly Unmanned," *National Defense* (October 2009), 25. Colonel Eric Mathewson, U.S. Air Force Unmanned Systems Task Force Director uses a lighter tone, "There are not many cases where you'll have free fire, where you're going to have the system completely automated." For quote see Joe Pappalardo, "Over the Horizon," *Popular Mechanics*, Vol. 187, No.3 (March 2010), 63.

⁸⁷ Singer, *Wired for War*, 125, 196.

⁸⁸ Singer, *Wired for War*, 59. Quote attributed to Senator John Warner, then chairman of the Senate Armed Services Committee, during a congressional hearing on February 8, 2000.

⁸⁹ Commander of 432nd Air Expeditionary Wing at Creech Air Force Base commented, "Warfare should be humanistic. Human value requires human interface." For quote see Joe Pappalardo, "Over the Horizon," *Popular Mechanics*, Vol. 187, No.3 (March 2010), 63.

⁹⁰ For one grass-roots evaluation of drone operations claiming "war crimes" see max Kantar, "International Law: the First Casualty of the Drone War," *ZNet*, December 11, 2009, <http://www.zcommunications.org/international-law-the-first-casualty-of-the-drone-war-by-max-kantar> (accessed February 4, 2010). Predator "feeds" have been renamed in military circles to Predator "porn". For reference see Mockenhaupt, "We've Seen the Future and It's Unmanned," 130.

⁹¹ Dave Grossman with Loren W. Christensen, *On Combat-The Psychology and Physiology of Deadly Conflict in War and in Peace*, (United States of America: Warrior Science Publications, 2008), 203.

⁹² P.W. Singer, *Wired for War*, 309.

⁹³ Grossman, *On Combat*, 203.

⁹⁴ Ibid.

⁹⁵ Singer, *Wired for War*, 129.

⁹⁶ Ibid, 332.

⁹⁷ Shaun McGrath, *Netted Bugs and Bombs: Implications for 2010* – “Chapter 11, Leveraging DMOS’s Hi-Tech Simulation Against The F-16 Flying Training Gap,” (Maxwell Air Force Base, AL: Air University, December, 2005), http://www.au.af.mil/au/awc/awcgate/cst/bugs_ch11.pdf (accessed March 1, 2010), 365.

⁹⁸ Singer, *Wired for War*, 329.

⁹⁹ Jane’s Unmanned Aerial Vehicles and Targets, *Jane’s Unmanned Aerial Vehicles and Targets Webpage*, in Jane’s database (accessed March 2, 2010).

¹⁰⁰ “Are You Ready?” *FEMA Are You Ready Webpage*, June 4, 2009, http://www.fema.gov/areyouready/nuclear_blast.shtm (accessed November 15, 2009).

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¹⁰⁵ Logan, *Drones: New Air Force*.

¹⁰⁶ Pappalardo, “Over the Horizon,” 57-63. For additional insight see Hagerman, “Unmanned Drone Aircraft.”

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¹⁰⁸ Ralph Peters, *Fighting for the Future: Will America Triumph?*, (Mechanicsburg, PA, Stackpole Books, 1999), 195, as paraphrased by Pat Roberts, U.S. Congress, “Hearing on the

Recent Attack in Yeman on the USS Cole,” Senate Armed Services Committee, http://www.globalsecurity.org/military/library/congress/2000_hr/001019-zinni_testimony.htm, October 19, 2000.

¹⁰⁹ Comment attributed to Dennis Blair in response to Senator Dianne Feinstein’s questioning during an open session of the Intelligence Committee discussing the Annual Threat Assessment. Mark Mazetti, “Senators Warned of Terror Attack on U.S. by July,” *New York Times*, February 2, 2010, <http://www.nytimes.com/2010/02/03/us/politics/03intel.html> (accessed February 12, 2010).

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¹¹² Rasool Dawarus and Ishtiaq Mahsud, “US Kills FBI-Wanted Terrorist in Pakistan Strike, Officials: US Missiles Killed FBI Most-Wanted Terrorist, Had \$5M Bounty for 1986 Hijacking,” *ABC News International* (January 15, 2010), <http://abcnews.go.com/International/wirestory?id=9570048&page=1> (accessed January 20, 2010).

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¹¹⁴ Singer, *Wired for War*, 327.